



**THE
QUEBEC BRIDGE**

29TH AUGUST, 1901

*Souvenir of a visit to the works by the
Canadian Press Association,*



**WITH THE COMPLIMENTS
of
M. P. DAVIS, CONTRACTOR**

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Q84

THE QUEBEC BRIDGE.

THE QUEBEC BRIDGE COMPANY was incorporated in 1887 by an Act of Dominion Parliament, but entered into the stage of practical action in 1897, when it was reorganized.

Its present Board of directors and officers is composed as follows :

President, Honorable S. N. Parent, Prime Minister of the Province and Mayor of the City of Quebec.

Vice-Presidents : R. Audette, of the firm of Thibaudeau Bros. & Co., President of Banque Nationale ; and Honorable R. R. Dobell, member of the Federal Cabinet, and a member of the firm of Dobell, Beckett, & Co., lumber merchants.

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Directors : Herbert M. Price, of the firm of H. M. Price & Co., lumber merchants ; Gaspard LeMoine, a director of the Quebec Bank, member of the firm of J. B. Renaud & Co., (flour and grain) ; H. J. Beemer, railway contractor ; J. B. Laliberté, wholesale furrier, a director of the Banque Nationale ; John Breakey, President of the Quebec Bank ; Narcisse Rioux, a director of the Banque Nationale, and a member of the firm of N. Rioux & Co., wholesale grocers ; Vesey Boswell, of Boswell Bros., brewers, and a director of the Quebec Bank ; and Honorable Némèse Garneau, member of the Legislative Council of Quebec.

Secretary-Treasurer : Ulric Barthe.

Chief Engineer : E. A. Hoare, C. E.

Consulting Engineer : Theodore Cooper, New York.

The following subsidies have been granted so far to the QUEBEC BRIDGE COMPANY, viz : by Federal Government, \$1,000,000 ; by Provincial Government, \$250,000 ; and by

the City of Quebec, \$300,000. The amount of stock subscribed by the citizens exceeds \$200,000, so that the local contribution to the undertaking is over half a million dollars.

The contract for the substructure was awarded in 1900 to M. P. Davis, Esq., of Ottawa, whose headquarters are close to the Bridge site, Victoria Cove, near Quebec.

Manager and Chief Engineer for the contractor : A. A. Stuart, C. E., Victoria Cove.

THE NECESSITY OF A BRIDGE AT QUEBEC.

All travellers arriving at Quebec by the South Shore personally experience the inconvenience of the old fashioned system of transportation still in existence across the St. Lawrence, passengers having to transfer their own baggage from the station to the ferryboat, then from the ferry to the cab or hotel bus. The outsiders' wonder is that a bridge has not been built long ago. As a matter of fact, the idea of bridging the St. Lawrence near Quebec originated as far back as 1851, but for involuntary causes had then to be abandoned, and was not revived sooner because it was too generally looked at as a mere local improvement. But now the question is recognized as of a national concern, the new St. Lawrence bridge being considered as the last

link necessary to complete the ever increasing railway system of this part of the country.

The railways now tapping the opposite stations of Quebec and Levis are the following :

On the North Shore, the Canadian Pacific, the Quebec & Lake St. John, the Great Northern of Canada, and the Quebec, Railway, Light & Power Company's steam and electric line.

On the South Shore, the Government Railway System, the Grand Trunk and the Quebec Central, and there is every probability that by next year the New York Central or the Rutland will extend their lines to Levis under the charter of the South Shore Railway ; which will make eight distinct railroads which must have bridge connections to or from Quebec.

As matters now stand, freight can only be transferred across the river by breaking bulk, and that on a very limited scale. A

whole class of the Joint Freight Association, the tenth, consisting of such heavy or bulky traffic as stone, timber, hay, machinery, cement, salt, binding materials, &c., is practically prohibited from interchange between the railways at Levis and Quebec.

The bridge now in construction will carry all the freight which is now transferred from one shore to the other west of Lachine and Victoria Bridges. It will shorten the distance by rail between Quebec and the Eastern States ; bring the different railways in competition at Quebec and cheapen cost of transportation, thereby stimulating new business, and also considerably reducing the cost of ferrying goods across the river, which now is three times what it will be over the bridge.

The northern part of the district of Quebec is rapidly becoming one of the greatest industrial sections of the country, through the development of water power and lumber and pulp manufacturing. The bridge

will be the only outlet the whole year round for those products to the United States market, and in winter to the nearest Atlantic seaports, as well as for the large western trade brought in by the Great Northern Railway.

As far back as 1889, Mr. James T. Furber, General Manager of the Boston & Maine, gave his opinion that the then considerable traffic done between Boston and Quebec was certainly not one-half the traffic which would go if a bridge were built at Quebec.

Several millions of dollars have already been or are just now being spent in building big industries north of Quebec and Three Rivers, namely at Grand Mère, Shawinigan, Chicoutimi, Jonquière, Metabetchouan, Peribonca and Ouatchouan, which want bridge connection at Quebec. The power house at Shawinigan now develops 30,000 H. P., with future capacity of 100,000 H. P., in the vicinity of manufactures of aluminum, calcium carbide, wood

pulp, chemical pulp and paper, all built or in course of construction, and all of which will use the bridge connection in both directions for their raw material and production, as well as the staple industries of the city and vicinity of Quebec itself. The above includes nothing but accomplished facts, besides which there are numerous other industrial schemes for developing our back country.

DESCRIPTION OF WORKS:

The Quebec Bridge is located about $6\frac{1}{2}$ miles west of the commercial centre of the City of Quebec over the narrowest portion of the St. Lawrence, between Montreal and Quebec. In selecting this site not only had the physical features of the locality to be considered for a bridge site, but the all important question of position for connections with the railway lines on both sides of the river, and also with the City and Harbour of Quebec.

The channel will be crossed with a suspended span and two cantilever arms, making an unsupported structure 1800 feet long between centre of main piers, which will be the longest span in the world. The length of anchor arms on each side of the main span will be 500 feet, with one approach span of 210 feet at each end between anchor piers and terminal abutments. The total

length of the structure, including terminal abutments, will be 3,300 feet. The floor level of the bridge is so arranged that there will be a clear headway of 150 feet between underside of lower chords and highest tides for vessels in the channel.

A clear width of 62 feet 6 inches will be provided between trusses for two steam railway tracks in the centre, divided by screens from a single electric track and highway on each side.

The coping of main piers will be 30 feet above high tide, and the highest point of superstructure above coping will be about 330 feet.

The depth of the suspended span will be about 120 feet at the centre.

The river at this point flows between high rocky cliffs on both sides, the water way being about 1900 feet at low tide and about 2500 feet at extreme high tide, tidal rise varying from a minimum of about 14 feet to a maximum of about 19 feet.

The maximum depth of water in the channel is about 180 feet, the tidal current there being 6 to 7 knots an hour.

The depth of water decreases rapidly towards the main river piers where at extreme low tide it is 10 feet deep, the maximum depth at high tide being 29 feet. These piers are 1800 feet apart between centres.

The substructure will consist of two main piers, two anchor piers, and two abutments. The north anchor pier containing about 6500 cubic yards of masonry and 250 tons of anchorage metal, is nearly completed, and it is proposed to complete the north main pier and north abutment containing together about 19,000 cubic yards of masonry this season, leaving the similar work on the south side to be completed next year. The foundations of the anchor pier and abutment on the north side have been carried to solid rock.

The masonry in the north main pier is being built up as the caisson upon which it

rests is gradually sunk to its final resting place below the river bed.

The masonry of the entire substructure will consist of huge blocks of granite facing backed with concrete.

The caissons for the two main piers are 150 x 49 feet in lateral dimensions, by 25 feet high, the height of underside of roof of working chamber above cutting edge being seven feet. They are built of Southern pine brought to the site in the rough and milled by a plant set up for the purpose, which comprises a circular saw, a butting saw, and a sizing machine cutting four sides at a time.

The caisson was built on the North Shore about 4000 feet east of the pier site and was successfully launched June 20th, towed into position and made fast in a berth previously prepared in the short space of one hour and ten minutes. At the site of the two main piers the water having a depth of only about 10 feet at low tide,

and as the caisson draws about 12 feet unloaded it grounded at low tide, but floated at high tide, the water there being about 29 ft. deep. The concrete was being placed in the crib work on top of the working chamber of caisson for north pier on June 28th, and excavation in the chamber was being carried on only during low tide, and it was so continued until sufficient concrete was put in to overcome the buoyancy of the air pressure, after which excavation has continued day and night ever since.

The Phoenix Bridge Company of Phoenixville, Pa., are the contractors for the superstructure, who have already furnished all the steel for anchorage. And they will commence the erection of the superstructure for the approach span between the north anchor pier and abutment as soon as the latter is completed this autumn. The materials for the south approach span will be delivered this fall ready for erection early next year.

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